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# The Effectiveness of an Emergency and Defensive Driving Techniques Course Component: Analyzing Student Response to Searching, Identifying, Predicting, Deciding and Executing Skills

Christopher Bradley Millard
*Eastern Kentucky University*

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By

Christopher Bradley Millard

Thesis Approved:

Chair, Advisory Committee

Member, Advisory Committee

Member, Advisory Committee

Member, Advisory Committee

Dean, Graduate School

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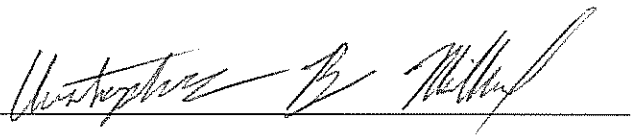
Signature 

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# The Effectiveness of an Emergency and Defensive Driving Techniques Course Component: Analyzing Student Response to Searching, Identifying, Predicting, Deciding and Executing Skills

By

Christopher Bradley Millard

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# ABSTRACT

This study examined the effectiveness of an Emergency and Defensive Driving Techniques Course by measuring the students' visual and perceptual skills. The final analysis involved 117 students who participated in Eastern Kentucky University's (EKU) Traffic Safety (TRS) 233. Records were obtained through the Traffic Safety Institute and contained no identifying information. Records obtained included a generic unique identification number, gender, pre-test scores and post-test scores.

Students were administered the Driver Performance Test II (DPT) prior to and after completing TRS 233. By determining the students crash potential prior to and after completing TRS 233, this study effectively determined the effect the course had on an individual's visual and perceptual skills. There was a significant difference in the mean pre- and post-test scores ($t$=6.31, $p$<.0001); the mean pre-test score was 144.96 ($SD$=13.45), and the mean post-test score was 153.50 ($SD$=11.98). In comparing individual skills of searching, identifying, predicting, deciding and executing skills (SIPDE), all showed a significant difference except the predicting skill. In conclusion, the data analyzed in this study refutes the idea that an Emergency and Defensive Driving Techniques Course fails to impact a student's ability to search, identify, predict, decide and execute driver scenarios.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| Control Students | CS |
| Department of Transportation | DOT |
| Driver Performance Analysis System | DPAS |
| Driver Performance Test | DPT |
| Identify, Predict, Decide, Execute | IPDE |
| National Safety Council | NSC |
| Pre-Driver License | PDL |
| Search, Evaluate, Execute | SEE |
| Search, Identify, Predict, Decide, Execute | SIPDE |
| Safe Performance Curriculum Training | SPC |
| Statistical Product and Service Solutions | SPSS |
| Traffic Safety | TRS |
| Traffic Safety Institute | TSI |

# CHAPTER I

## Introduction

The results of this study provide an evaluation of the students' ability to judge driving scenarios prior to and after participating in Eastern Kentucky University's TRS 233: Emergency and Defensive Driving Techniques Course. The students have been administered the same Driver Performance Test at the beginning of the class and as part of the final exam. Each student, providing they attended every class, was exposed to approximately two sessions a week over a sixteen week course. The course components included a combination of classroom lectures, driving simulations and practical in-vehicle range training. Specifically, this study examined the visual and perceptual skills of participants involved with this course.

### Background

The Driver Performance Test, developed by the late Jack Weaver Ph.D., has been proven to be a genuine way of measuring a driver's visual and perceptual skills. The Motor Vehicle Driver DPT Competency Scales chart found in Appendix A was developed by Dr. Weaver. This test score/crash frequency chart was "based on eight thousand randomly selected experienced automobile and light truck drivers with a mean annual driving exposure of 15,000 miles" (Weaver, 1996). Dr. Weaver stated that this scale does not correlate with either the United States Department of Transportation (DOT) or the National Safety Council (NSC) crash rates. The lack of correlation between DPT Driver Competency Scale/Motor Vehicle Drivers chart and DOT and NSC results from "all crashes regardless of fault, extent of injuries, or value of property damage, are included in the crash frequency rates" (Weaver, 1996). The Driver Control Sequence is based upon building the visual and mental skills that allow the driver to determine the

motion and steering skills required to successfully drive a vehicle. The Driver Performance Test II was designed to evaluate a student's visual and perceptual skills based upon the Search, Identify, Predict, Decide, and Execute ("SIPDE") skills.

**Statement of the Problem**

The Driver Performance Test (DPT) was designed to evaluate the student's ability to Search, Identify, Predict, Decide and Execute decisions and skills in a driving environment. The TRS 233 Course was designed to provide and improve the ability to drive a vehicle. The method of grading used in a university/college environment does not effectively specifically measure one's ability to effectively use the SIPDE process.

**Purpose of the Study**

This study produced information regarding the students' ability to perform searching, identifying, predicting, deciding and executing skills prior to and after participating in a sixteen week Emergency and Defensive Driving Techniques course. By comparing pre and post-test scores, this study has been able to evaluate the students' ability to gather visual and mental skills over the course of a semester. The Purpose of this study was to determine what impact, if any, a training course (TRS 233: Emergency and Defensive Driving Techniques) has had on the student's ability to analyze the driving environment.

**Potential Significance**

The results of each test indicate the frequency rate at which the participant will be involved in a crash. According to the Driver Performance Analysis System, the results of this study have provided a foundation for developing future driver skill enhancement courses. By determining the participants crash potential prior to and after taking the TRS 233 Course, the study provided the impact of a skill enhancement course on the student's

ability to Search, Identify, Predict, Decide and Execute skills and decisions while driving a motor vehicle. As vehicle technology continues to change, a driver's visual and mental skills remain an issue that technology cannot correct.

**Definition of Terms**

***Driver Control Sequence*** **–** The driver control sequence is what the driver must follow while operating a motor vehicle. This sequence is vision, motion and steering. The first step of the sequence is vision. Vision is where the driver must look to where he/she wants to take vehicle. The second step is motion. The driver must use his/her brake when entering a turn and acceleration when exiting a turn. The third and final step is steering. The driver must steer with the steering wheel as the last step of this sequence to properly control a vehicle.

***Drive a Vehicle*** – The term *drive* refers to the driver having the knowledge and capability to maneuver a vehicle in a safe and controlled manor.

***Operate a Vehicle*** – The term *operating* refers to the driver lacking the capability of making the vehicle maneuver in a safe and controlled manor. The driver has only the skills to operate the controls of the motor vehicle.

***Driver Education*** – The term *driver education* describes novice driver instruction in the area of vehicle operation, regulations and knowledge of a motor vehicle.

***Enhancement Course*** –The term *enhancement course* shall refer to courses that are designed to identify a driver's basic control skills and provide a process to deal with emergency situations through the Driver Control Sequence.

***Student & Participant*** – The terms *student* and *participant* shall be used in conjunction with one another. The terms *student* and *participant* are not gender, race, or age specific. However, all participants will be no less than 18 years of age at time of participation.

***Risk*** – The term *risk* shall be used in this study to describe a scenario where harm or interference may be inflicted upon one's self at one's own discretion.

***Hazard*** –The term *hazard* will describe a scenario where harm or interference shall be present prior to and/or against one's own discretion by an environmental situation.

***Process*** – The term *process* shall be used to describe the manner in which the brain gathers and analyzes information.

***System*** – The term *system* shall be used to describe what the driver reflects upon while driving.

***IPDE*** – The IPDE process is a four step process that describes how the mind processes the information, not how the driver assesses the environment. While the driver's mind does follow through each of the four steps, he/she should refer to the SEE Process to concentrate on the driving environment.

***SEE System*** – The *SEE system*, or Search, Evaluate and Execute System, describes the steps a driver should follow while assessing the environment. The objective of the SEE system is to condense the IPDE and SIPDE processes into a simpler system for drivers to remember.

***SIPDE Process*** – The *SIPDE Process* is a five step process that describes how the mind processes the information, not how the driver assesses the environment. While the driver's mind does follow through each of the five steps, he/she should refer to the SEE Process to concentrate on the driving environment.

***Search*** – The term *search* shall be used in this study as it pertains to the driver's perspective, describing the student's ability to scan the driving environment with his or her eyes. A lack of a searching technique could hinder the driver with false information.

***Identify*** – The term *identify* shall be used in this study to describe the driver's ability to correctly identify potential risks and hazards in the driving environment.

***Predict*** – The term *predict* shall be used to describe the driver's ability to estimate what will happen in the driving environment by inducing what was collected during the searching stage.

***Decide*** – The term *decide* shall be used to describe the driver's ability to make decisions based upon what information has been collected in the driving scenario. As defined by Dr. Francis Kenel (1967), key elements of the step: *decide,* focuses on the concept of minimizing, separating or a combination of both minimizing and separating, thus compromising techniques in relation to vehicle speed and lane position.

***Execute*** – The term *execute* as the final part of the Process, shall be used to describe the driver's ability to carry out one of those decisions based on the information collected from the driving scenario.

***React*** – The term *react* shall refer to the driver making sudden and often uncontrolled decisions when presented with a sudden risk or hazard in the driving environment.

***Respond*** – The term *respond* shall refer to the driver making informed decisions based upon what he/she collects from the driving scenario.

**Assumptions**

This study kept assumptions limited in an effort to provide the most accurate data. Three assumptions were made. The first assumption was that previous studies performed

and information collected from the literature was complete and accurate. Second, the data acquired from the Traffic Safety Institute was accurate. The third assumption was that the students enrolled in the TRS 233 Course were active participants.

**Limitations**

The limitations of this study included preexisting data, course length of no more than 16 weeks, and records that only dated back to 2010. No further information was able to be gathered than what was provided from the Traffic Safety Institute. This study focused on the effectiveness of the techniques course over the length of the semester.

**Organization of the Study**

Results of this study are presented in a clear and precise manor. Results are displayed by the number of participants, pre-test scores, pre-test SIPDE scores, post-test scores, post-test SIPDE scores, and the variation between the pre-test and post-test score. Individual SIPDE scores helped to explain the rate of being involved in a collision under that step of the process. Results are provided for all students and students that participated in the Driver Performance Test.

CHAPTER II

# Literature Review

Existing literature formed the foundation of the development of the Driver Performance Test and the foundation for the way in which this study determined the effectiveness of the Emergency and Defensive Driving Techniques Course. While some of the literature was dated, the foundation and effectiveness holds true to this day. While vehicles and the way in which the driver operates a vehicle have changed drastically over the past few years, the way in which the driver searches for information, identifies potential hazards, predicts what will happen, decides what to do, and then executes that decision has remained the same.

## Improvement Programs

Wei Zhang studied the effectiveness of driver improvement programs. Zhang's study in 2010 focused on driver improvement programs across the state of Iowa. Funded by the Department of Transportation, Zhang examined over twelve thousand participants at seventeen driver improvement programs. The purpose of Zhang's study was to determine if a relationship existed between driver age and gender compared with their conviction and collision rates. Data was provided without identifying information by the Iowa Motor Vehicle Division.

According to Zhang, those who participated in the Driver Improvement Program, 71% were conviction free and 93% were collision free during one year from completion. "It was also found that male drivers and young drivers (30 years of age or younger) incurred more convictions, while older drivers (40 years of age or older) had fewer crashes in both the satisfactory and unsatisfactory groups" (Zhang, 2010). According to

the study, participants who fell under the unsatisfactory group had higher conviction rates than those who were in the satisfactory group.

Barbara Wright, of Florida State University, administered and evaluated the Florida Driving Knowledge Examination Test in 1978 and 1979. In evaluating the test, Wright examined the participants' driving skills, general driving knowledge test and combined results. While Wright found a significant relationship between student driving performance scores and scores on the general driving knowledge, there were no relationships found between "knowledge items which were directly related to driving skills" (Wright, 1979) and road performance.

**Naturalistic**

Terry Smith studied the effects of sight distance training on the visual scanning techniques. Although this study pertained to the visual techniques of motorcycle riders, the same naturalistic eye tracking software is used all areas of transportation. The purpose of study was to determine if rider's visual behaviors differentiate between the three categories included in the study. The three categories included in this study were experienced riders, untrained-beginners and trained-beginners. Each participant wore a specially designed helmet with video cameras and sensors that tracked and pinpointed where the rider was looking throughout the course. This software was programed to determine how far the rider was looking. Each motorcycle was equipped with a GPS to record the riders speed and determine their stopping distance.

Smith found that the ratio from sight to stopping distance fell below "1.0 more often for beginner-untrained riders than for beginner-trained and experienced riders" (Smith, 2013). According to Smith, the beginner-untrained group showed significantly larger

gaze than the other two groups, with a confidence ellipse area of 95% (Smith, 2013). Smith concluded that beginner-trained riders moved faster in curves on the close course, while experienced riders moved faster in curves on the open road.

**Driver Performance Test**

Under the guidance of the U.S. Department of Transportation and the National Highway Traffic Safety Administration, the DeKalb County School System was charged with the evaluation of the Safe Performance Curriculum. The study, *Impact Assessment of the Safe Performance Curriculum on On-Road Driving Test Performance* was published on December 31, 1980, per DOT-HS-805-886. The DeKalb County Project was directed by Jack Weaver Ph.D. According to the study, the primary focus pertained to the effectiveness of Safe Performance Curriculum Training (80 hour course), Pre-Driver Licensing Training (30 hour course), and a group of students with the lack of formal driver education known as Control Students (Ray & Brink, 1980, p. 9). The study was administered over a three year period and included a total sample size of 459 students (100 SPC, 117 PDL, 242 CS) from year two of the study (Ray & Brink, 1980, p. 9). The total number of students that participated in the study over the three years was "1543 in the SPC group, 1505 in the PDL group, 519 in the CS group; for a total of 3567 students" (Ray & Brink, 1980, p. 9). A secondary assessment objective was to determine a relationship between participant sex, status, grade point average and the On-Road Performance Test.

At the conclusion of the study, Ray and Brink determined that the scores of the participants who took part in the Safe Performance Curriculum had surpassed the scores of the participants who took part in the Pre-Driver Licensing Training and the Control

group. There was no relation between the scores of the On-Road Performance Test and the participant's gender, grade point average, or socio-economic status.

As the precursor, the DeKalb: Driver Education Project set forth the guidelines of the study and indicated that further research was to be conducted. This follow-up described the semi-long term results. Issued in August 1987, the follow-up evaluation provided data pertaining the three categories of participants (Safe Performance Curriculum, Pre-Driver License, Control Students) and their involvement in collisions and convictions. Driving records were collected from the State of Georgia and included participants' records from the date they completed the course through 1985.

During the six years since the original project, the study concluded that students who were included in the PDL group reduced their collisions approximately 6%, and 5% in the PDL (Ray & Brink, 1987, p. 6). The Control group showed 10% higher moving violation rates than the PDL group and 9% higher than the SPC group (Ray & Brink, 1987, p. 6). The follow-up study found there was a reduction in collisions for males and females and a reduction of convictions for males in the PDL group. However, the SPC group showed no significant reduction for collisions. The findings inferred that the PDL group showed a reduction of collisions in the first two years. That reduction was only marginal in the remaining four years.

Now owned and operated by the United Safety Council, the Driver Performance Analysis System (DPAS) was originally created by Jack Weaver, Ph.D. Weaver created the Driver Performance Test in 1981 in order to determine the levels of an individual's perceptual driving skills. While the DPAS is now available in several versions, its primary focus remains the same as intended by Weaver. The DPAS allows the participant

to answer a single question pertaining to searching the driving environment, identifying possible conflicts, predicting what will happen, deciding what to do, and executing that decision based on what the participant observed in a short video. Although DPAS cannot predict a collision, it can be used to predict the frequency rate at which a participant may be involved in a collision.

Participants exposed to the DPA System are subjected to visual situations that improve their driving perceptual skills as they are exposed to different driving scenarios. This is accomplished by the Driver Performance Test, composed of forty multiple choice questions. Each of the five components of SIPDE was assigned eight questions. Answers are assigned a numerical value in order of correctness where the most correct is worth five points, the next correct is worth three points, the next correct is worth one point and the least correct answer worth zero points. By compiling numerical values, the test will display the participant's likelihood of being involved in a collision based upon his/her deficiency. A copy of the DPT Driver Competency Scale can be found in Appendix A.

The original study, performed in 1979/1981 in DeKalb County Georgia, was the foundation for Weaver's Driver Performance Test. Studies such as the Driver Education Knowledge Evaluation administered by Barbara Wright and the Follow-up Evaluation of the Safe Performance Curriculum Project found that, while relationships were found between performance scores and driving knowledge, there were also differences between students who were trained in either classrooms or behind-the-wheel lessons.

CHAPTER III

# Methodology

The methodology of this study included the collection and examination of preexisting student pre and post test scores. The pre- and post-tests were identical as the student was administered the same Driver Performance Test at the beginning and end of TRS 233: Emergency and Defensive Driving Techniques Course at Eastern Kentucky University.

## Context of the Study

The Driver Performance Test II was designed to evaluate the student's visual and perceptual skills, based upon the Search, Identify, Predict, Decide, and Execute ("SIPDE") skills. The test was composed of forty video scenarios. Each scenario was followed by one multiple choice question. There were four possible answers to each question. Each answer was assigned a value with the most correct answer scored at five points, the next correct answer at three points, the next at one point, and the least correct at zero points. Each question was designed specifically as a SIPDE question. Each question was designed to test the student's ability to search the driving scenario, identify possible threats, predict what other vehicles or pedestrians will do, decide the best course of action, and execute that decision. A key aspect of using the SIPDE process was the strengthening of the driver's ability to respond correctly, and not react to changes in the driving environment. The Driver Performance Test II was designed to measure the participant's crash potential.

## Selection of Participants

Participants were collected from the TRS 233: Emergency and Defensive Driving Techniques Course administered at Eastern Kentucky University. All students who have participated in the course and still had records on file were included in the study.

Students' records that did not offer complete pre- and post-test scores were collected. Incomplete records were not included in the analysis of the effectiveness of visual and mental skills development in the Emergency and Defensive Driving Techniques course.

**Research Questions**

This study served to compare a student's ability to effectively search, identify, predict, decide and execute their decision as it pertains to their driving ability at the beginning and end of an Emergency and Defensive Driving Techniques Course. The primary objective of this study was to prove or refute that an Emergency and Defensive Driving Techniques Course influences a participants' ability to search, identify, predict, decide and execute in relationship to the visual and perceptual skills related to driving.

**Data Collection**

Data was collected from the Traffic Safety Institute Office (TSI). Only generic unique identification numbers assigned by TSI, gender, SIPDE pre-test scores and SIPDE post-test scores, pre-test and post-test scores were obtained. If a student had participated multiple times, only the most recent record was included in the data. No individual identifying information was collected.

**Data Analysis**

Each student was masked with a generic unique identification number, as provided by TSI. Research records that included generic unique id numbers, genders, pre-test and post-test were requested and obtained in an electronic Excel Database. SPSS version xx was used for final analysis of the data. Paired samples t-tests were performed as appropriate.

## Subjectivity and Bias

Personal bias was not present in this study as the purpose of this study is to disclose what impact an Emergency and Defensive Driving Techniques Course made on TRS 233 students' visual and perceptual skills. Traffic safety and ways to reduce collision rates were of interest. TRS 233 strived to find ways to effectively measure one's probability of being involved in a collision and how to mitigate those risks.

CHAPTER IV

## Research Findings and Analysis

There was a significant difference in the mean pre- and post-test scores ($t$=6.31, $p$<.0001); the mean pre-test score was 144.96 ($SD$=13.45) and the mean post-test score was 153.50 ($SD$=11.98). There was a significant difference in the mean pre- and post-test scores for all components of the tests except the Predicting component (See Table 1). There was no significant difference in the mean pre- and post-predicting scores ($t$=.81, $p$=.4); the mean pre-predicting score was 28.42 ($SD$=5.19) and the mean post-predicting score was 28.79 ($SD$=5.11). A significance level of $\propto$=.05 was used throughout.

Table 1
Comparison of Pre- and Post DPT Scores

| Course Component | Pre-Test Mean (*SD*) | Post-Test Mean (*SD*) | *t* (*p*-value) |
|---|---|---|---|
| Searching | 30.56 (4.19) | 31.90 (3.39) | 3.25 ($p$=.002) |
| Identifying | 30.34 (4.65) | 31.97 (4.46) | 3.23 ($p$=.002) |
| Predicting | 28.42 (5.19) | 28.79 (5.12) | .81 ($p$=.4) |
| Deciding | 26.90 (4.82) | 29.83 (4.09) | 5.42 ($p$<.0001) |
| Executing | 28.83 (5.06) | 30.91 (4.59) | 3.58 ($p$=.001) |

Results of this study stratified by gender can be found in Appendix B. There were a total of 169 students who participated in the TRS 233 course from 2010 to 2012. Out of the 169 students, 117 complete records were obtained. The 117 records that were used in the final analysis were composed of 94 male students and 23 female students.

# CHAPTER V

## Discussion and Implications

### Discussion and Implications

The results of this study have shown a significant difference in the student's ability to search, identify, predict, decide and execute sills over the course of the TRS 233 course. The one SIPDE component that the course did not improve the student's skills was the ability to predict what was going to happen. As the TRS 233 course was not designed specifically to match the DPT, the course did make significant improvement on the students SIPDE skills. It can be expected that not every aspect of the SIPDE skills would display an equal impact.

### Recommendations

Several studies have found relationships between driver's visual and perceptual skills and the driver's demographics. Demographics include the driver's age, gender and income level. This study did not include driver's demographics, due to the data being pre-existing. The amount of information pertaining to each individual was limited as the Traffic Safety Institute did not collect the driver's demographics.

One recommendation would be to perform this study in regard to the TRS 235 (Emergency Vehicle Roadway Operations Safety). TRS 235 pertains specifically to Fire Science Administration. This area of Fire Science is currently backed with little data and could benefit from visual and perceptual investigation.

A comparison between TRS 233 and TRS 235 could present interesting data. TRS 233 (Emergency and Defensive Driving Techniques) is a voluntary course which no students are required to take. TRS 235 (Emergency Vehicle Roadway Operations Safety) is a required course that Fire Science students must take.

Another factor that could provide further explanation in performance and driving behavior could be the drivers Personality. According to Littauer's 2006 book, *Wired that Way,* there are four personalities; popular, powerful, peaceful and perfect. The perfect personality will focus on the details. This person's pros include proper planning, the ability to understand and be able to explain details, the ability to be symbiotic to others, the ability to focus groups attentions, having the ability to track financial records and ensuring the group is aware of the long-range goals. The cons for the perfect personality include being easily distracted by the details and offending others by appearing to have a superior intelligence. The powerful personality will represent the leader in the group. The powerful personality pros include having the ability to motivate people, being able to control plans and productivity, ensuring that the group is aware of the immediate gain, and having the ability to give fast and precise instructions. The cons for the powerful personality include overpowering and intimidating others.

The peaceful personality will support the group. This person's pros include ensuring the group remains calm, relaxed and comfortable. He/she has the ability to remain calm during arguments and has the ability to discover a middle ground for the group. While this person is believable, he or she appears to be monotone or lazy. The popular personality is the creative person in the group. The popular' pros include being the enthusiastic member, encouraging the group and inspiring others. However, this type of person tends to have a poor memory and becomes easily distracted.

A final recommendation would be to obtain Driver History Records and compare these records to student's DPT scores. This analysis could display how long the TRS 233 training influences a student's driving ability.

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## Appendix A

Driver Performance Test / Driver Competency Scale / Motor Vehicle Drivers

Table 2
Driver Performance Test / Driver Competency Scale / Motor Vehicle Drivers

| Key | Test Points | Percentage | Mean Crash Frequency Rate Per Million Milles | Significance |
|---|---|---|---|---|
| **DPT** | | | | |
| | 165-200 | 83-100 | 2.97 | Excellent Functional Skills. |
| | 139-164 | 70-82 | 4.16 | Above Average Functional Skills. |
| | 103-138 | 52-69 | 14.36 | Average Functional Skills. |
| | 84-102 | 42-51 | 36.79 | Below Average Functional Skills. |
| | 50-83 | 25-41 | 63.05 | Poor Functional Skills. |
| **Search** | | | | |
| | 35-40 | 88-100 | 3.81 | Excellent Search Skills. |
| | 29-34 | 73-87 | 7.17 | Above Average Search Skills. |
| | 21-28 | 53-72 | 15.40 | Average Search Skills. |
| | 15-20 | 38-52 | 41.15 | Below Average Search Skills. |
| | 0-14 | 0-37 | 79.83 | Poor Search Skills. |
| **Identify** | | | | |
| | 37-40 | 93-100 | 4.17 | Excellent Identify Skills. |
| | 33-36 | 83-92 | 6.23 | Above Average Identify Skills. |
| | 23-32 | 58-82 | 17.23 | Average Identify Skills. |
| | 18-22 | 45-57 | 29.93 | Below Average Identify Skills. |
| | 0-17 | 0-44 | 47.17 | Poor Identify Skills. |
| **Predict** | | | | |
| | 33-40 | 83-100 | 5.23 | Excellent Predict Skills. |
| | 26-32 | 65-82 | 7.73 | Above Average Predict Skills. |
| | 16-25 | 40-64 | 15.37 | Average Predict Skills. |
| | 11-15 | 28-39 | 29.65 | Below Average Predict Skills. |
| | 0-10 | 0-27 | 33.27 | Poor Predict Skills. |
| **Decide** | | | | |
| | 30-40 | 75-100 | 3.01 | Excellent Decide Skills. |
| | 25-29 | 63-74 | 4.71 | Above Average Decide Skills. |
| | 17-24 | 42-62 | 13.08 | Average Decide Skills. |
| | 12-16 | 30-41 | 39.19 | Below Average Decide Skills. |
| | 0-11 | 0-29 | 74.14 | Poor Decide Skills. |
| **Execute** | | | | |
| | 31-40 | 78-100 | 1.16 | Excellent Execute Skills. |
| | 26-30 | 65-77 | 4.41 | Above Average Execute Skills. |
| | 19-25 | 48-64 | 14.77 | Average Execute Skills. |
| | 13-18 | 33-47 | 29.11 | Below Average Execute Skills. |
| | 0-12 | 0-32 | 37.17 | Poor Execute Skills. |

Source: Weaver, J. K. (1996). *Driver Performance Test II.* (p.8).

## Appendix B

Comparison of Pre- and Post DPT Scores by Gender

Table 3
Comparison of Pre- and Post DPT Scores Male Students

| Course Component | Pre-Test Mean (*SD*) | Post-Test Mean (*SD*) | *t* (*p*-value) |
|---|---|---|---|
| DPT | 144.71 (13.37) | 153.28 (11.06) | 6.03 (*p*=<.0001) |
| Searching | 30.68 (3.93) | 31.85 (3.34) | 2.50 (*p*=.014) |
| Identifying | 30.32 (4.59) | 32.03 (4.61) | 2.99 (*p*=.004) |
| Predicting | 28.11 (5.34) | 28.56 (5.01) | .90 (*p*=.373) |
| Deciding | 26.82 (4.79) | 30.02 (4.00) | 5.52 (*p*<.0001) |
| Executing | 28.81 (5.18) | 30.79 (4.61) | 3.01 (*p*=.003) |

Table 4
Comparison of Pre- and Post DPT Scores Female Students

| Course Component | Pre-Test Mean (*SD*) | Post-Test Mean (*SD*) | *t* (*p*-value) |
|---|---|---|---|
| DPT | 145.96 (14.03) | 154.43 (15.43) | 2.23 (*p*=.036) |
| Searching | 30.04 (5.17) | 32.09 (3.66) | 2.33 (*p*=.030) |
| Identifying | 30.43 (4.96) | 31.70 (3.90) | 1.20 (*p*=.244) |
| Predicting | 29.70 (4.45) | 29.74 (5.49) | .038 (*p*=.970) |
| Deciding | 27.22 (5.03) | 29.04 (4.46) | 1.31 (*p*=.205) |
| Executing | 28.91 (4.66) | 31.43 (4.55) | 1.97 (*p*=.062) |